Chapter 2. Alternatives, Including the proposed action

2.1 Introduction

This chapter describes and compares the alternatives considered in the Como Forest Health Project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form to sharply define the differences between each alternative and provide a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative (i.e., road construction versus no road construction) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e., the amount of erosion caused by helicopter logging versus skidding). The estimates provided in this section were derived in the same way for each alternative and are appropriate for use in comparing alternatives. The actual quantities may vary after project implementation because of unforeseen factors arising during implementation.

2.2 Alternatives Considered in Detail

The Forest Service developed 4 alternatives to carry through analysis, including the No Action and Proposed Action alternatives, in response to issues raised by the public. Other alternatives were considered but not analyzed in detail. alternatives not analyzed in detail are discussed in section 2.3.

2.2.1 Alternative 1 – No Action

Under the No Action alternative, current management plans would continue to guide management of the project area (Figure 2.2-1). No timber harvest, thinning, road construction or reconstruction, or prescribed fire would be implemented to accomplish the Como Forest Health project goals.

Implementation of activities approved in earlier decisions would continue (Table 2.2-1).

Table 2.2-1: Activities Occurring in the Como Forest Health Project Area

PROJECT NAME	TYPE OF PROJECT
Trapper Peak allotment	Range management
Recreation management	Lake Como campground and recreation area, dispersed sites, Trail 502
Como Hazardous Fuels Reduction Project	Removal of dead or infested trees from Como campgrounds
Elytroderma deformans study	Research on management of elytroderma needle cast
Lost Moose Hazardous Fuels Reduction project	Prescribed fire in areas north of Lost Horse Road
Seed Production Area (SPA)	Thinned area retaining trees with good form and phenotypes that produce seed for reforestation needs

2.2.2 Alternative 2 – Proposed Action

Alternative 2 is the proposed action modified to include additional fieldwork that indicated some of the originally proposed actions were not feasible, other resource conditions make treatment unnecessary at this time, or we identified better locations for proposed activities. Other changes were made to simplify the analysis. Units that were largely in the riparian habitat conservation areas (RHCAs) (Units 2, 29, 30, 31, 33, 35, part 63 (below the ditch road)) do not require treatment at this

time to meet or sustain the riparian management objectives. Treatments in the RHCA need to emphasize the riparian dependent resources (INFISH 1995, Standard and Guide TM-1(b) and Attachment A page A-4). Unit 40 was withdrawn from the analysis because it was a small skyline unit and no other skyline units were close enough to make moving the equipment to the unit feasible. Some units were combined because the forest composition and proposed treatments were similar (Figure 2.2-2).

- Unit 7 was combined with Unit 10
- Unit 37 was combined with Unit 14
- Unit 54 was combined with Unit 53
- Unit 56 was combined with Unit 38

Unit 69 was changed to Unit 75 so the aspen treatment units would be numbered between 70 and 79. The burn blocks were reconfigured so they referred to prescribed burn areas only. Burn blocks F and G were withdrawn from the analysis because the whole area of the burn blocks is proposed for commercial or non-commercial harvest. A portion of burn blocks C and E were re-numbered C2 and E2, respectively, because the prescribed fire treatments are separated by mechanical treatments. Burn block H was modified to exclude prescribed fire from the seed production area.

The access to Unit 41 was changed because excessive side slopes on the proposed route prohibit road construction. The new route, though longer, has a manageable grade and avoids the steepest sideslopes. Access to the Bitterroot Irrigation District (BRID) road was changed to avoid building a crossing over the ditch. The proposed location accesses the ditch road near the siphon and eliminates the need to cross the irrigation ditch. The access to Unit 50 changed from building a steep, temporary road from the end of NFSR 62945 to constructing a new national forest system road on the contour, north from NFSR 62945 and connecting it to a temporary road and skid trail on the ridge. The new road would have a much gentler grade and would be outside of the riparian areas.

2.2.2.1 Alternative Description

In the 5,711-acre project area, approximately 1,680 acres of ponderosa pine and 47 acres of lodgepole pine forest would be treated to reduce their susceptibility to mountain pine beetle infestation under Alternative 2. Another 280 acres would be treated to reduce dwarf mistletoe and Douglas-fir beetle hazard. Commercial timber harvest would occur on 1,476 acres and the remaining 531 acres would be non-commercial thin treatments. All treated units would be followed with a post-harvest review that would evaluate the need for additional non-commercial thinning, slash piling, and the type of slash treatment.

Low severity prescribed fire would follow most of the treatments in commercial harvest units. In addition, low severity fires would be prescribed on 765 acres and moderate severity fire would be prescribed on 542 acres outside of harvest or thinning treatment units. Fuels would be reduced on 1999 acres using harvest treatments and prescribed fire, on 1,307 acres using prescribe fire only, and on eight acres using harvest treatment only. Approximately 2,234 (67%) acres of the treated area are in the wildland-urban interface (WUI) (Table 2.2-2).

Approximately 1.7 miles of new system road, 2.0 miles of temporary road, and 2.6 miles of tracked line-machine (TLM) trail would be constructed to access timber (Figure 2.2-2). Individual lengths of road or trail vary between 69 and 5,667 feet (Table 2.2-2). TLM trail requires level pads, 20 by 20 feet at 125-150 foot intervals, on which the line-machine stands. New system roads would be stored following timber harvest and tracked line-machine trails would be rehabilitated (Table 2.2-5).

Table 2.2-2: Proposed Treatments for each Unit in Alternative 2.

Unit No.	Treatment*	Area (acre)	WUI Area (acre)	Yarding Method		Road & Trail Construction		
				Ground (acre)	Cable (acre)	System (ft)	Temp. (ft)	TLM[1]/ excavated skid (ft)
1	Uneven-age, single tree selection	42	5	33	0	0	0	311
3	Intermediate harvest (<18"DBH)	20	0	20	0	0	0	86
4	Group Selection	10	0	0	5	0	0	824
5	Group Selection	24	8.5	0	10	0	0	2826
6	Group Selection	21	0	0	8	0	0	0
8	Intermediate Harvest 40-60 BA	38	38	0	38	0	0	2933
9	Intermediate Harvest 40-60 BA	21	21	21	0	0	0	0
10	Intermediate Harvest 40-60 BA	59	59	35	0	0	0	0
11	Non-commercial Thin	NO TREATMENT						
12	Uneven-age, 40-60 BA	199	199	166	0	0	0	0
13	Non-commercial Thin	57	57	N/A	N/A	N/A	N/A	N/A
14	Non-commercial Thin	88	88	N/A	N/A	N/A	N/A	N/A
15	Intermediate Harvest	3	0	0	3	0	0	953
16N	Group Selection	9	9	0	9	0	0	512
16S	Intermediate Harvest	8	8	1	7	0	0	1250
17	Intermediate Harvest	21	21	13	0	0	0	0
18	Intermediate Harvest	31	31	29	0		0	0
19	Intermediate Harvest	14	14	0	14	0	0	0
20	Intermediate Harvest	8	8	0	8	0	1950	0
21	Intermediate Harvest	10	10	0	10	0	0	0
22	Intermediate Harvest	NO TREATMENT						
22A	Non-commercial Thin	NO TREATMENT						
23	Intermediate Harvest	NO TREATMENT						
23A	Non-commercial Thin	NO TREATMENT						
24	Non-commercial Thin	35	35	N/A	N/A	N/A	N/A	N/A
25	Intermediate Harvest	15	15	15	0	0	0	0
26	Intermediate Harvest	52	52	52	0	0	0	0
27	Intermediate Harvest	26	26	0	26	0	0	0
28	Intermediate Harvest	50	50	44	0	0	2184	0
32	Intermediate Harvest	9	9	9	0	0	0	72
34	Intermediate Harvest	17	17	5	0	0	0	68
36	Non-commercial Thin	204	204	N/A	N/A	N/A	N/A	N/A
38	Group Selection	34	34	12	0	0	1446	0
39	Uneven-age, single tree selection	101	0	75	0	0	0	0
41	Group Selection	24	24	0	12	5667	0	0
42	Group Selection	25	25	13	0	0	0	0
43	Non-commercial thin	34	3.5	N/A	N/A	N/A	N/A	N/A
45	Group Selection	87	6	17	0	0	0	0
46	Intermediate Harvest	14	0.2	0	14	0	0	2318
47	Intermediate Harvest	5	4	0	5	0	0	0

Unit No.	Treatment*	Area (acre)	WUI Area (acre)	Yarding Method		Road & Trail Construction		
				Ground (acre)	Cable (acre)	System (ft)	Temp. (ft)	TLM[1]/ excavated skid (ft)
48	Intermediate Harvest	5	0	5	0	0	0	0
49	Intermediate Harvest	45	0	31	0	0	0	0
50	Intermediate Harvest	47	29	25	0	1449	1597	0
51	Non-commercial thin	47	0	N/A	N/A	N/A	N/A	N/A
52	Non-commercial thin	9	9	N/A	N/A	N/A	N/A	N/A
53	Intermediate Harvest	249	249	212	0	2078	0	0
57	Group Selection	29	29	6	0	0	0	0
58	Group Selection	4	4	0	2	0	227	0
59	Intermediate Harvest	5	5	5	0	0	0	0
60	Group Selection	21	21	0	6	0	0	1841
61	Intermediate Harvest	27	27	35	0	0	0	0
62	Intermediate Harvest	30	30	21	0	0	2226	0
64	Non-commercial thin	57	57	N/A	N/A	N/A	N/A	N/A
65	Intermediate Harvest	17	17	10	0	0	812	0
66	Non-commercial thin	NO TREATMENT						
66A	Non-commercial thin	NO TREATMENT						
70	Aspen treatment	NO TREATMENT						
73	Aspen treatment	NO TREATMENT						
74	Aspen treatment	NO TREATMENT						
75	Aspen treatment	NO TREATMENT						
A	Prescribed Fire	30	30	N/A	N/A	N/A	N/A	N/A
B	Prescribed Fire	452	452	N/A	N/A	N/A	N/A	N/A
B2	Prescribed Fire	INCLUDED IN UNIT B						
C	Prescribed Fire	171	0	N/A	N/A	N/A	N/A	N/A
C2	Prescribed Fire	63	0	N/A	N/A	N/A	N/A	N/A
D	Prescribed Fire	74	74	N/A	N/A	N/A	N/A	N/A
E	Prescribed Fire	371	0	N/A	N/A	N/A	N/A	N/A
E2	Prescribed Fire	26	0	N/A	N/A	N/A	N/A	N/A
G	Prescribed Fire	NO TREATMENT						
H	Prescribed Fire	120	120	N/A	N/A	N/A	N/A	N/A
TOTALS		3314	2234	909	177	9,194	10,442	13,994
PERCENTAGES			67	45[2]	9	(1.74mi)	(1.98 mi)	(2.65 mi)

2.2.3 Alternative 3 – No New Road Construction

The Forest Service developed Alternative 3 in response to public comments opposed to the construction of new roads. In this alternative no new system or temporary roads would be constructed and no tracked line-machine trails would be developed. Units 2, 4, 5, 16, 20, 28, 29, 30, 32, 34, 38, 41, 46, 60, and 65 that would require these facilities were withdrawn from analysis (Figure 2.2-3). The parts of Units 50, 51, and 62 that could be treated from current access points were retained in the analysis. We added two ponderosa pine plantations (Units 66 and 66A) to Alternative 3 for non-commercial thinning. Slash would be scattered but not burned in these two units following treatment.

Rocky Mountain Research Station foresters monitoring treatments established in the 1990s as part of the Lick Creek Environmental Assessment requested the inclusion of follow-up treatments as part

of the Como Forest Health project. Since this request came after the proposed action was sent out for scoping and the request does not require the construction of new roads or tracked line-machine trail, the units were included in this alternative. The numbers of the research units are: 11, 22, 22A, 23, and 23A (Figure 2.2-3). Unit 40 would be treated under Alternative 3 because Unit 23 also requires skyline equipment.

Burn units A, B2, C2, and E2 would be thinned before the prescribed fire is ignited to improve conditions appropriate for a low severity burn. Prescribed fire treatments in burn blocks F and H were absorbed by timber harvest and thinning units (Figure 2.2-3). A small fragment of burn block G remains.

2.2.3.1 Alternative Description

Under Alternative 3, approximately 2,034 acres of ponderosa pine and seven acres of lodgepole pine forest would be treated to reduce their susceptibility to mountain pine beetle infestation. Another 183 acres are treated to reduce dwarf mistletoe and Douglas-fir beetle hazard. Commercial timber harvest would occur on 1,295 acres and the remaining 929 acres would be non-commercial thin treatments. All treated units would be followed with a post-harvest review that would evaluate the need for additional non-commercial thinning, slash piling, and the type of slash treatment.

A low severity prescribed fire would follow most of the treatments in commercial harvest units. In addition, low severity fires would be prescribed on 380 acres and moderate severity fire would be prescribed on 542 acres outside of harvest or thinning treatment units. Fuels would be reduced on 2,171 acres using mechanical treatments and prescribed fire, on 53 acres using harvest treatments only, and on 922 acres using prescribe fire only. Approximately 1,992 (63%) treated acres are in the WUI (Table 2.2-3).

2.2.4 Alternative 4 – Conservation of Big-game Winter Range

Alternative 4 was developed to place stronger emphasis on conserving wildlife habitat and visual quality while meeting the purpose and need for the Como Forest Health Project. Management areas in the project area emphasize big-game winter range (52% of the project area), forage (86%), and cover (26%). Old growth should be eight percent, in each third order drainage, over 78% of the project area. In another 14% of the project area there should be no degradation of old growth habitat. Public comments noted the potential conflict between implementing the proposed action and conserving or enhancing wildlife habitat.

Visual quality is also an important consideration in this project area. Management areas in the Como Forest Health project area span the range of visual quality objectives from maximum modification to retention. In this alternative, units that would cause long-term changes to the landscape character are not treated with commercial harvest.

Aspen clones are treated in this alternative to promote wildlife habitat diversity (Figure 2.2-4). In most of the aspen clones, the treatments consist of cutting or girdling the conifers that shade the aspen and inhibit their growth and development. The treatments provide understory structure and snags. Cut conifers would be removed from the edges of aspen units 73 and 74 that are within Units 10 and 17. Yarding equipment would be not be used in Stream Management Zone (SMZ) or wetlands to extract logs. Trees felled in the SMZ that cannot be extracted without equipment entering the SMZ would be left on site.

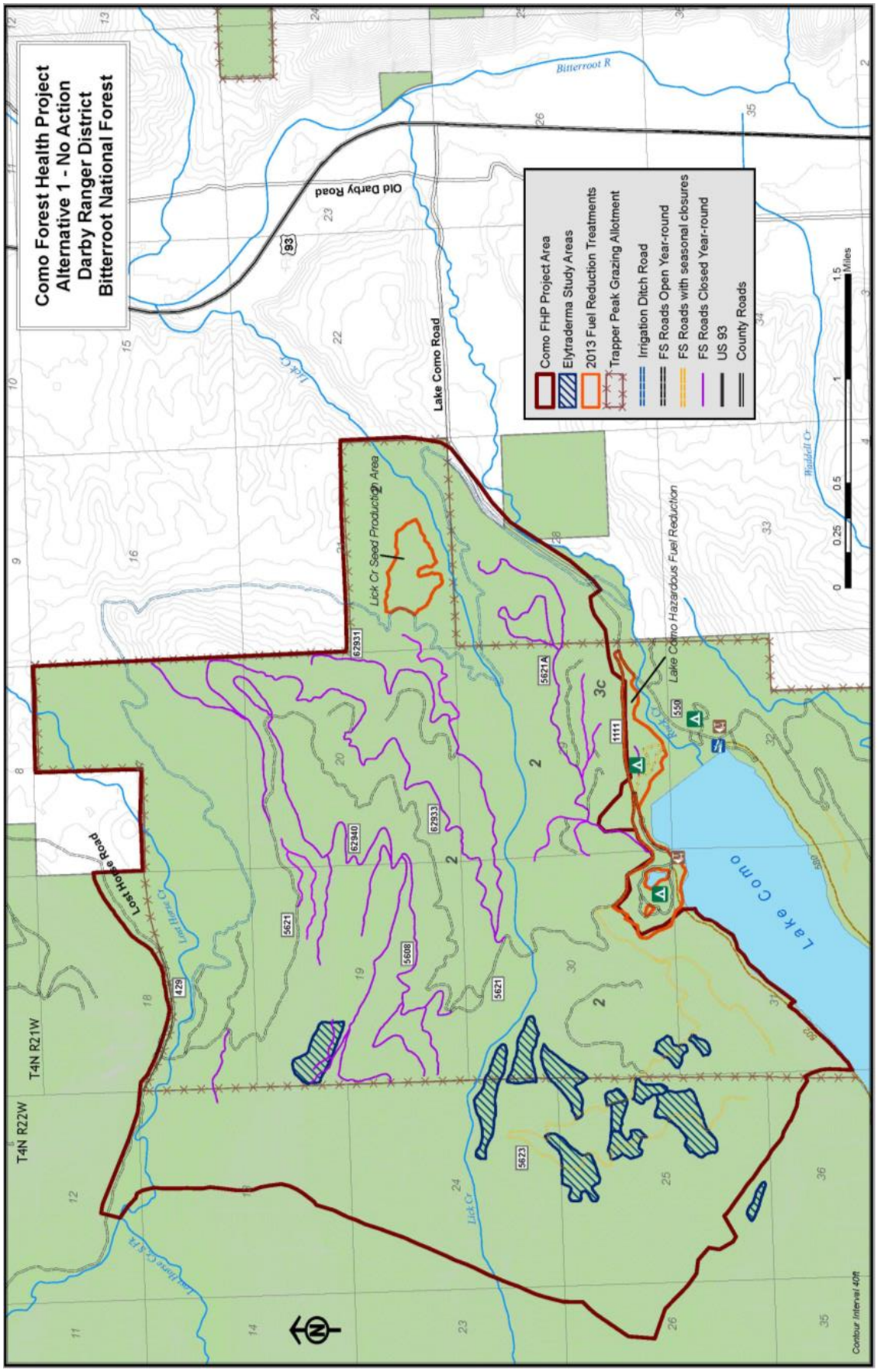

Figure 2.2-1: Como Forest Health Project Area showing current activities under Alternative 1, No Action alternative.

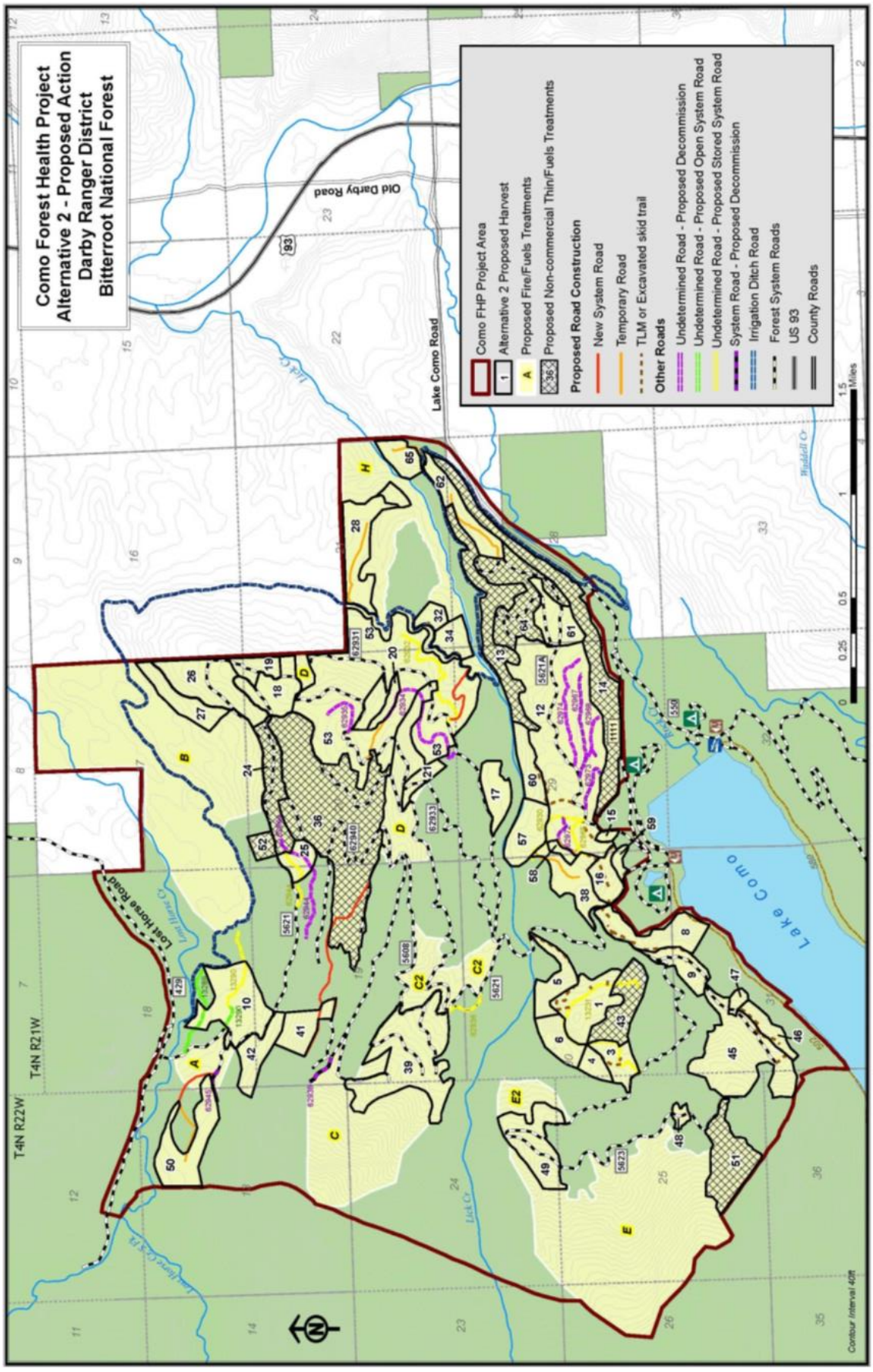

Figure 2.2-2: Proposed Treatments in Alternative 2 of the Como Forest Health

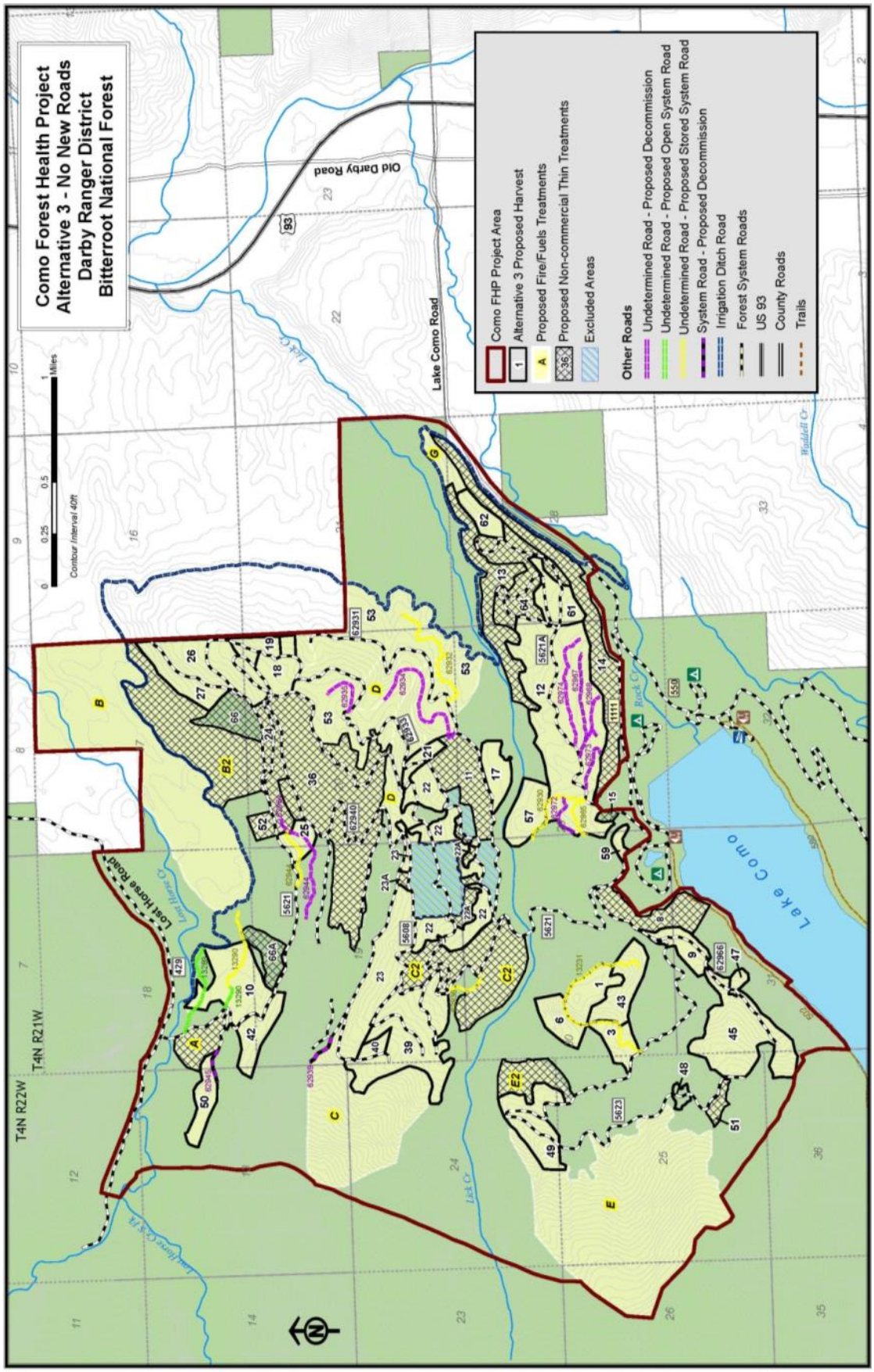

Figure 2.2-3: Proposed Treatments in Alternative 3 of the Como Forest Health Project

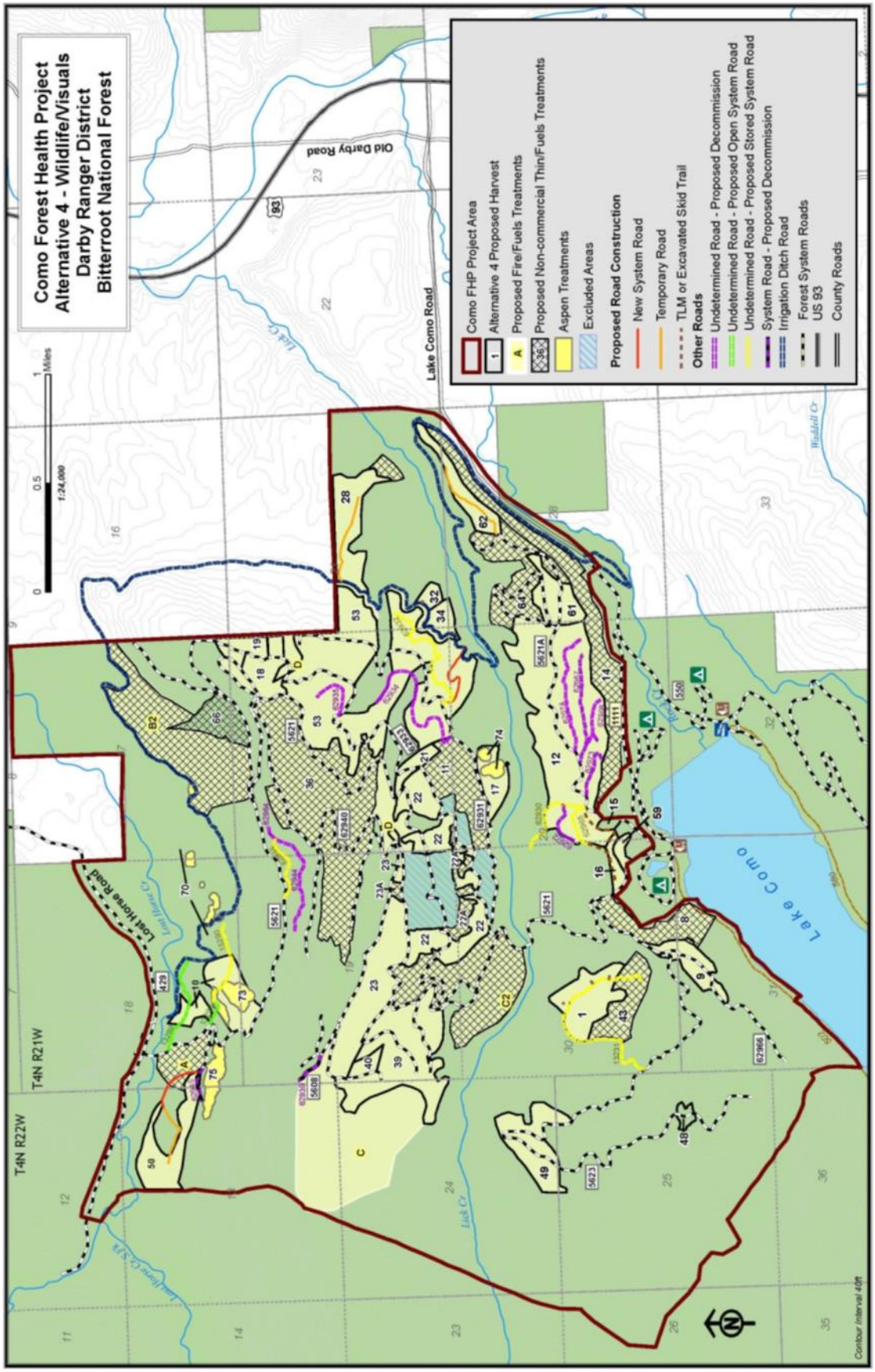

Figure 2.2-4: Proposed Treatments in Alternative 4 of the Como Forest Health Project

Table 2.2-3: Proposed Treatments for each Unit in Alternative 3

Unit No.	Treatment*	Area (acre)	WUI Area (acre)	Yarding Method		Road & Trail Construction		
				Ground (acre)	Cable (acre)	System (ft)	Temp. (ft)	TLM[1]/ excavated skid (ft)
1	Uneven-age, single tree selection	26	0	26	0	0	0	0
3	Intermediate Harvest (<18"DBH)	20	0	20	0	0	0	0
4	Group Selection	NO TREATMENT						
5	Group Selection	NO TREATMENT						
6	Group Selection	21	0	0	8	0	0	0
8	Non-commercial thin	38	38	0	0	N/A	N/A	N/A
9	Intermediate Harvest	21	21	21	0	0	0	0
10	Intermediate Harvest	59	59	35	0	0	0	0
11	Non-commercial Thin	50	50	N/A	N/A	N/A	N/A	N/A
12	Uneven-age, single tree selection	199	199	166	0	0	0	0
13	Non-commercial Thin	57	57	N/A	N/A	N/A	N/A	N/A
14	Non-commercial Thin	88	88	N/A	N/A	N/A	N/A	N/A
15	Non-commercial thin	3	0	0	0	0	0	0
16N	Group Selection	NO TREATMENT						
16S	Intermediate Harvest	NO TREATMENT						
17	Intermediate Harvest	21	21	13	0	0	0	0
18	Intermediate Harvest	31	31	29	0	0	0	0
19	Intermediate Harvest	14	14	0	14	0	0	0
20	Intermediate Harvest	NO TREATMENT						
21	Intermediate Harvest	10	10	0	10	0	0	0
22	Intermediate Harvest	76	48	74	0	0	0	0
22A	Non-commercial Thin	16	11	N/A	N/A	N/A	N/A	N/A
23	Intermediate Harvest	79	30	58	5	0	0	0
23A	Non-commercial Thin	3	3	N/A	N/A	N/A	N/A	N/A
24	Non-commercial Thin	35	35	N/A	N/A	N/A	N/A	N/A
25	Intermediate Harvest	15	15	15	0	0	0	0
26	Intermediate Harvest	52	52	52	0	0	0	0
27	Intermediate Harvest	26	26	0	26	0	0	0
28	Intermediate Harvest	NO TREATMENT						
32	Intermediate Harvest	NO TREATMENT						
34	Intermediate Harvest	NO TREATMENT						
36	Non-commercial Thin	204	204	N/A	N/A	N/A	N/A	N/A
38	Group Selection	NO TREATMENT						
39	Uneven-age, single tree selection	101	0	75	0	0	0	0
40	Intermediate Harvest	7	0	0	7	0	0	0
41	Group Selection	NO TREATMENT						
42	Group Selection	25	25	13	0	0	0	0
43	Non-commercial thin	34	4	N/A	N/A	N/A	N/A	N/A
45	Group Selection	87	6	17	0	0	0	0
46	Intermediate Harvest	NO TREATMENT						
47	Intermediate Harvest	5	4	0	5	0	0	0
48	Intermediate Harvest	5	0	5	0	0	0	0

Unit No.	Treatment*	Area (acre)	WUI Area (acre)	Yarding Method		Road & Trail Construction		
				Ground (acre)	Cable (acre)	System (ft)	Temp. (ft)	TLM[1]/ excavated skid (ft)
49	Intermediate Harvest	45	0	31	0	0	0	0
50	Intermediate Harvest	21	19	11	0	0	0	0
51	Non-commercial thin	7	0	N/A	N/A	N/A	N/A	N/A
52	Non-commercial thin	9	9	N/A	N/A	N/A	N/A	N/A
53	Intermediate Harvest	249	249	212	0	0	0	0
57	Group Selection	29	29	6	0	0	0	0
58	Group Selection	NO TREATMENT						
59	Intermediate Harvest	5	5	5	0	0	0	0
60	Group Selection	NO TREATMENT						
61	Intermediate Harvest	27	27	35	0	0	0	0
62	Intermediate Harvest	16	16	16	0	0	0	0
64	Non-commercial thin	57	57	N/A	N/A	N/A	N/A	N/A
65	Intermediate Harvest	NO TREATMENT						
66	Non-commercial thin	27	0	N/A	N/A	N/A	N/A	N/A
66A	Non-commercial thin	18	0	N/A	N/A	N/A	N/A	N/A
70	Aspen treatment	NO TREATMENT						
73	Aspen treatment	NO TREATMENT						
74	Aspen treatment	NO TREATMENT						
75	Aspen treatment	NO TREATMENT						
A	Prescribed Fire with non-commercial thin	24	24	N/A	N/A	N/A	N/A	N/A
B	Prescribed Fire	306	306	N/A	N/A	N/A	N/A	N/A
B2	Prescribed Fire with non-commercial thin	124	124	N/A	N/A	N/A	N/A	N/A
C	Prescribed Fire	171	0	N/A	N/A	N/A	N/A	N/A
C2	Prescribed Fire with non-commercial thin	104	0	N/A	N/A	N/A	N/A	N/A
D	Prescribed Fire	59	59	N/A	N/A	N/A	N/A	N/A
E	Prescribed Fire	371	0	N/A	N/A	N/A	N/A	N/A
E2	Prescribed Fire with non-commercial thin	26	0	N/A	N/A	N/A	N/A	N/A
G	Prescribed Fire	15	15	N/A	N/A	N/A	N/A	N/A
H	Prescribed Fire	NO TREATMENT						
TOTALS		3159	1990	935	75	0	0	0
PERCENTAGES			64	72[2]	6			

2.2.4.1 Alternative Description

Under Alternative 4, approximately 1,842 acres of ponderosa pine forest would be treated to reduce their susceptibility to mountain pine beetle infestation. Another 45 acres are treated to reduce dwarf mistletoe and Douglas-fir beetle hazard. In addition, conifers would be girdled or thinned from about 39 acres of aspen to rejuvenate the aspen clones. In aspen units 70 and 75 felled conifers would be left on site because equipment to remove the logs could not access the wetlands (Figure 2.2-4). Aspen units 73 and 74 are within Units 10 and 17, respectively, so felled conifers would be cabled to the adjacent uplands. Commercial timber harvest would occur on 1,117 acres and the remaining 770 acres would be non-commercial thin treatments. All treated units would be

followed with a post-harvest review that would determine the need for additional non-commercial thinning, slash piling, and the type of slash treatment.

Low severity prescribed fire would follow most of the treatments in commercial harvest units. In addition, low severity fires would be prescribed on 31 acres and moderate severity fire would be prescribed on 171 acres outside of harvest or thinning treatment units. Fuels would be reduced on 1,873 acres using mechanical treatments and prescribed fire, on 35 acres using harvest treatments only, and on 202 acres using prescribe fire only. Approximately 1,452 (69%) treated acres are in the WUI (Table 2.2-4).

Approximately 0.7 miles of new system road, 1.2 miles of temporary road, and 0.5 mile of tracked line-machine (TLM) trail would be constructed to access timber (Figure 2.2-4). Individual lengths of road or trail vary between 69 and 2,226 feet (Table 2.2-4). TLM trail requires level pads, 20 by 20 feet at 125-150 foot intervals, on which the line machine stands.

Table 2.2-4: Proposed Treatments for each Unit in Alternative 4

Unit No.	Treatment*	Area (acre)	WUI Area (acre)	Yarding Method		Road & Trail Construction		
				Ground (acre)	Cable (acre)	System (ft)	Temp. (ft)	TLM[1]/ excavated skid (ft)
1	Uneven-age, single tree selection	42	5	33	0	0	0	497
3	Intermediate harvest (<18"DBH)	NO TREATMENT						
4	Group Selection	NO TREATMENT						
5	Group Selection	NO TREATMENT						
6	Group Selection	NO TREATMENT						
8	Non-commercial thin	38	38	N/A	N/A	N/A	N/A	N/A
9	Intermediate Harvest	23	23	21	0	0	0	0
10	Intermediate Harvest	47	47	27	0	0	0	0
11	Non-commercial Thin	50	50	N/A	N/A	N/A	N/A	N/A
12	Uneven-age, single tree selection	199	199	166	0	0	0	0
13	Non-commercial Thin	NO TREATMENT						
14	Non-commercial Thin	88	88	N/A	N/A	N/A	N/A	N/A
15	Intermediate Harvest	3	0	0	3	0	0	1410
16N	Group Selection	NO TREATMENT						
16S	Intermediate Harvest	8	8	1	7	0	0	1,250
17	Intermediate Harvest	21	21	13	0	0	0	0
18	Intermediate Harvest	31	31	29	0	0	0	0
19	Intermediate Harvest	14	14	0	14	0	0	0
20	Intermediate Harvest	NO TREATMENT						
21	Intermediate Harvest	10	10	0	10	0	0	0
22	Intermediate Harvest	76	48	74	0	0	0	0
22A	Non-commercial Thin	16	11	N/A	N/A	N/A	N/A	N/A
23	Intermediate Harvest	79	30	58	5	0	0	0
23A	Non-commercial Thin	3	3	N/A	N/A	N/A	N/A	N/A
24	Non-commercial Thin	NO TREATMENT						
25	Intermediate Harvest	NO TREATMENT						
26	Intermediate Harvest	NO TREATMENT						
27	Intermediate Harvest	NO TREATMENT						
28	Intermediate Harvest	50	50	44	0	0	2184	0

Unit No.	Treatment*	Area (acre)	WUI Area (acre)	Yarding Method		Road & Trail Construction		
				Ground (acre)	Cable (acre)	System (ft)	Temp. (ft)	TLM[1]/ excavated skid (ft)
32	Intermediate Harvest	6	6	6	0	0	0	73
34	Intermediate Harvest	11	11	5	0	0	0	69
36	Non-commercial Thin	204	204	N/A	N/A	N/A	N/A	N/A
38	Group Selection	NO TREATMENT						
39	Uneven-age, single tree selection	101	0	75	0	0	0	0
40	Intermediate Harvest	7	0	0	7	0	0	0
41	Group Selection	NO TREATMENT						
42	Group Selection	NO TREATMENT						
43	Non-commercial thin	34	4	N/A	N/A	N/A	N/A	N/A
45	Group Selection	NO TREATMENT						
46	Intermediate Harvest	NO TREATMENT						
47	Intermediate Harvest	NO TREATMENT						
48	Intermediate Harvest	5	0	5	0	0	0	0
49	Intermediate Harvest	45	0	31	0	0	0	0
50	Intermediate Harvest	41	25	25	0	1449	1597	0
51	Non-commercial thin	NO TREATMENT						
52	Non-commercial thin	NO TREATMENT						
53	Intermediate Harvest	239	239	212	0	2079	0	0
57	Group Selection	NO TREATMENT						
58	Group Selection	NO TREATMENT						
59	Intermediate Harvest	5	5	5	0	0	0	0
60	Group Selection	NO TREATMENT						
61	Intermediate Harvest	27	27	35	0	0	0	0
62	Intermediate Harvest	25	25	21	0	0	2226	0
64	Non-commercial thin	57	57	N/A	N/A	N/A	N/A	N/A
65	Intermediate Harvest	NO TREATMENT						
66	Non-commercial thin, No Prescribed Fire	27	27	N/A	N/A	N/A	N/A	N/A
66A	Non-commercial thin, No Prescribed Fire	NO TREATMENT						
70	Aspen treatment	8	8	N/A	N/A	N/A	N/A	N/A
73	Aspen treatment	(12)	(12)	5	N/A	N/A	N/A	N/A
74	Aspen treatment	(6)	(6)	6	N/A	N/A	N/A	N/A
75	Aspen treatment	13	13	3	N/A	N/A	N/A	N/A
A	Prescribed Fire	24	24	N/A	N/A	N/A	N/A	N/A
B	Prescribed Fire	NO TREATMENT						
B2	Prescribed Fire with non-commercial thin	124	124	N/A	N/A	N/A	N/A	N/A
C	Prescribed Fire	171	0	N/A	N/A	N/A	N/A	N/A
C2	Prescribed Fire with non-commercial thin	104	0	N/A	N/A	N/A	N/A	N/A
D	Prescribed Fire	31	31	N/A	N/A	N/A	N/A	N/A
E	Prescribed Fire	NO TREATMENT						
E2	Prescribed Fire	NO TREATMENT						
G	Prescribed Fire	NO TREATMENT						
H	Prescribed Fire	NO TREATMENT						

UNIT NO.	TREATMENT*	AREA (ACRE)	WUI AREA (ACRE)	YARDING METHOD		ROAD & TRAIL CONSTRUCTION		
				GROUND (ACRE)	CABLE (ACRE)	SYSTEM (FT)	TEMP. (FT)	TLM[1]/ EXCAVATED SKID (FT)
TOTALS		2107	1506	900	46	3528	6007	3299
PERCENTAGES			71%	81[2]	4	(0.67mi)	(1.14 mi)	(0.62mi)

[1] TLM: Tracked line-machine; a cable yarding system
[2] Percent of ground and cable harvest are based on harvested area only; prescribed fire and non-commercial thin areas are not included in the calculation.

2.2.5 Features Common to All Action Alternatives

2.2.5.1 Roads Management

There are just over 7 miles of undetermined roads in the Como FH project area. The Forest Service assessed these roads during field reviews and determined which roads were needed for current and future management. Most of these roads are connected to road systems that are designated closed. In all the action alternatives approximately 0.6 miles of road would remain open, 3.1 miles of road would be stored, and the remaining 3.5 miles would be decommissioned (Figure 2.2-2 –Figure 2.2-4). No additional rehabilitation work or soil disturbance is needed to decommission the roads because they are stable and grown in with large trees.

Approximately 0.5 mile of national forest system road would be decommissioned, NFSR 62939 and 62945. The end of NFSR 62939 is a redundant road that is no longer needed to access timber. The first 100 feet of this road would be recontoured. The end of NFSR 62945 is a steep section of road that is downcutting and eroding. The road would be obliterated from the junction with the new proposed road. Obliteration would require improving drainage to prevent erosion, decompacting the road surface, and recontouring where material is available. The road would be fertilized, seeded, and mulched. Slash and rock would be used to reinforce the closure.

The first 100 feet of stored roads, specifically NFSR 62937, 62938, and 62963, will be recontoured, the culverts pulled, and the rest of the road scarified and seeded.

Watershed Improvement treatments –

All action alternatives would implement four watershed improvement activities to reduce sediment (Figure 3.7-1). The activities would be funded by stewardship funds or other funding sources. The activities would be implemented when funding allows, but most likely between the start of the timber sale and 1-2 years after the timber sale closure. The watershed improvement activities are:

- Stabilize NFSR 62936 borrow pit and road: the road and borrow pit would be closed to motorized vehicles, lightly scarified, water barred where needed, seeded and mulched.
- NFSR 5621 culvert replacement on NFSR 5621, at the first intermittent stream crossing north of NFSR 5608 junction to stabilize the channel.
- NFSR 62931 culvert replacement at NFSR 5621 junction.
- Closure of an unauthorized OHV trail at the NFSR 5608/NFSR 5621 junction.

2.2.5.2 Design Features and Mitigation Measures

The Forest Service developed the following design features and mitigation measures to be used as part of all of the action alternatives. Design features are standard operating procedures or actions

the Forest Service is directed to take by law, regulation, or policy. Mitigation measures are additional actions the Forest Service will take to prevent or reduce a potential effect.

The design features and the objectives that would be achieved are described in Table 2.2-5.

Table 2.2-5: Design Features for the Como Forest Health Project

OBJECTIVE	DESIGN FEATURE
SOILS	
Minimize soil erosion and compaction	Activities will comply with Best Management Practices (BMPs) to minimize effects to soil resources. BMPs are listed in Appendix A. Complete descriptions are available in the Project File.
Reduce soil erosion, prevent sedimentation into streams, and prevent the spread of noxious weeds	Disturbed sites, such as skid trails and landings, will be evaluated by timber sale administrators (TSAs) and/or resource specialists to determine erosion control and revegetation needs. Soil disturbances associated with landings, roadside ditches, temporary roads, or other areas would be rehabilitated as soon as possible using treatments such as re-contouring, seeding, fertilizing, and covering with slash.
Minimize soil compaction	Winter ground-based yarding operations will maintain the following combination of snow depth and frozen soil conditions Depth of compacted (by equipment) snow under wheels or track tread / Minimum thickness of solidly frozen soil needed below compacted snow layer 10 or more inches — 0 inches 7 to 10 inches — 1 inch 4 to 7 inches — 2 inches less than 4 inches — 4 inches *Pre-trailing. Pre-trailing selected skid trails a day or so prior to skidding or other heavy trail use is a way to achieve this objective. If average, pre-compacted snow depth along the proposed trail is more than 15 inches, pre-trailing can be done whether or not the soil is frozen. If pre-compacted snow depth is 8 to15 inches; pre-trailing should be done only if the soil is solidly frozen in the top one inch or more. Otherwise, pre-trailing should be delayed until more snow falls to accumulate to the 15 inch or more depth. To further aid soil protection, pre- trailing should be done using an "easy-does-it" approach, including slow ground speeds and steady movements. Avoid spinning tires and bouncing equipment around on trails as much as possible. Adequate pre-trailing air temperatures generally are in the low 20's Fahrenheit or lower. For more information about pre-trailing conditions, consult with the Forest soil scientist.
	Skid trails will be designated and historic trails and road prisms will be used as skid trails to the extent feasible
	Summer ground-based yarding will occur when soils are dry (soil moisture is near or below the permanent wilting point)
Reduce detrimental soil disturbance (DSD)	Rehabilitation activities on temporary road construction would include recontouring, slashing, mulching, seeding with an approved native seed mixture, and fertilizing with an approved organic fertilizer.
	Pile burning should occur during moist conditions to minimize duff consumption and high severity burn impacts on soils.
	Hand pile sizes inside units will average 6-8 feet in diameter so localized areas of soil disturbance will be less than about 50 square feet. This does not pertain to slash created on landings during yarding operations. (Individual hand piles will generally not exceed 50 ft2 (pile size approximately 6 to 8 ft in diameter

<table>
<tr><th>OBJECTIVE</th><th>DESIGN FEATURE</th></tr>
<tr><td></td><td>Where feasible, pile and burn slash where detrimental soil disturbance already exists, such as on old log landings and skid trails</td></tr>
<tr><td>Reduce DSD and prevent the spread of noxious weeds</td><td>Undetermined roads used for hauling will be stabilized by removing drainage structures; ripping, seeding, and fertilizing the road bed; and closing the road entrance.</td></tr>
<tr><td>Maintain soil productivity</td><td>Upon completion of commercial harvest and prescribed fire activities, the following levels of coarse woody material (greater than 3 inches diameter) shall be left. This material will include the combination of standing dead as well as down woody fuels.
<table>
<tr><th>Units</th><th>Fire Group</th><th>Coarse Woody Debris</th></tr>
<tr><td></td><td>Warm, Dry Ponderosa Pine and Douglas-fir (FG-2 & 4)</td><td>5-10 tons/acre</td></tr>
<tr><td></td><td>Cool, Dry or Moist Douglas-fir (FG-5, 6)</td><td>10-20 tons/acre</td></tr>
<tr><td></td><td>Cool Sites Usually Dominated by Lodgepole Pine (FG-7) Dry, Lower Subalpine (FG-7) Moist, Lower Subalpine (FG-9)</td><td>8-24 tons/acre</td></tr>
</table></td></tr>
<tr><td></td><td>Wood larger than 15 inches in diameter will not be intentionally ignited during hand lighting. It is understood that once hand crews light the fire, fire may burn into and combust some large CWD.</td></tr>
<tr><td></td><td>Allow time for nutrients to leach from slash prior to burning. The slash will be left through one winter after cutting to allow for initial decomposition and nutrient leaching.</td></tr>
<tr><td></td><td>Upon completion of prescribed fire or maintenance burning, at least 70 percent ground cover is necessary to prevent detrimental accelerated erosion and loss of soil productivity. In those cases where ground cover is less than 70 percent prior to burning, consumption and loss of ground cover should not exceed 15 percent. Ground cover includes duff, organic soil horizons, basal area of vegetation, fine woody debris, coarse woody debris, and surface coarse fragments. In those cases where ground cover is less than 70 percent prior to burning, fuel consumption and ground cover loss should not exceed 15 percent. Fire prescriptions will be designed to meet these soil protection requirements.</td></tr>
<tr><td></td><td>The silvicultural prescriptions will be designed to account for future large CWD (>15 inches diameter) recruitment that will meet acceptable levels in stands where CWD is less than minimum levels before treatment. CWD will be left in these stands to the extent feasible to meet minimum requirements that do not pose a fuels hazard. High amounts of small CWD (3-15 inches diameter) may present wildfire risks.</td></tr>
<tr><td></td><td>CWD will generally be evenly distributed on each acre, unless otherwise agreed to by the Contracting Officer or their designee</td></tr>
<tr><td colspan="2">WATERSHED AND FISHERIES</td></tr>
<tr><td>Ensure that within the Riparian Habitat Conservation Areas (RHCAs) the riparian dependent resources receive primary emphasis.
And,</td><td>The standard INFISH (USDA Forest Service 1995) RHCAs will be applied. A map of these areas is located in PF-Fish-001. They are:
300 feet on each side of fish-bearing streams
150 feet on each side of permanently flowing, non-fish bearing streams
100 feet on each side of seasonally flowing or intermittent streams
150 feet on each side of ponds, lakes or wetlands > 1 acre in area
100 feet on each side of ponds, lakes or wetlands < 1 acre in area
100 feet of landslide prone areas.</td></tr>
</table>

OBJECTIVE	DESIGN FEATURE
Ensure that the Montana Streamside Management Zone Laws are met.	RHCA boundaries will be designated and marked on the ground in consultation with the fish biologist or hydrologist.
	In RHCAs, trees can be felled when they pose a safety risk. Felled hazard trees will be left on-site (INFISH standard RA-2), unless their removal is deemed necessary for safety reasons by the TSA.
	Generally, trees will not be harvested from Riparian Habitat Conservation Areas (RHCAs). Exceptions are: Unit 73: conifers would be removed from the intermittent stream and outer fringe of the wetland RHCA, Units 74: conifers would be removed from the small wetland RHCA, and Unit 70 and 75: cut trees would be left in the RHCA. The purpose of these proposed treatments in RHCAs are based on the treatments contribution to promote the long-term ecological integrity of the deciduous species and associated wildlife, while having no effect on native fish (INFISH Standard and Guideline for Watershed Restoration and Habitat WR-1). Note: not all units are in all the alternatives.
	Ground-based equipment will be prohibited from entering SMZs without the appropriate variance from Montana DNRC.
	Log landings, temporary roads, and tracked line machine trails will not be located in the RHCAs. Exceptions include areas where existing log landings occur: near the mapped wetland at Unit 45 and road 62966, Unit 39 along road 62938.
	Generally, there will be no fuel storage, mixing of fuels, or refueling equipment in RHCAs. If there are no alternatives, refueling in RHCAs may occur, but must be pre-approved by the fish biologist or hydrologist and have an approved spill containment plan. Small pumps (for example, Mark III) and chainsaws can be refueled within the RHCA as long as proper spill containment actions are implemented (USDA Forest Service 1995).
	The TSA or resource specialists will monitor road conditions to ensure they do not contribute sediment to streams. Road maintenance activities (including snowplowing and dust abatement) will follow the requirements specified in the Programmatic Biological Assessment for Road-Related Activities (2008, & 2014) and BNF BMPs (Appendix A).
Provide stable roads and conduct road maintenance to minimize sediment.	Drainage from haul roads will be maintained, during all hauling periods. This includes, but is not limited to providing water access to ditches, inlets of ditch relief pipes, and outlets that are kept free of blockage. Holes in snow berms will be adequate to allow road drainage prior to winter haul, and kept open throughout the duration of winter hauling.
	Weed-free or weed-seed-free straw bale check dams or similar treatment will be installed as needed in the inside ditch on NFSR 5621. The check dams will be installed prior to hauling, and maintained for the duration of hauling.
	Project related traffic will be regulated during wet periods to minimize erosion and sediment delivery to streams (INFISH RF-2)
	Side-casting of road material (during road maintenance and snowplowing) into streams, wetland, and RHCAs is prohibited (SMZ Rule #8; INFISH RF-2(f)).
	Seed, fertilize, and slash decompacted or recontoured roads with a native seed mix and organic fertilizer.. Weed-free mulch is required on sites located within sediment contributing distance of streams (about 300 feet).
Provide for diverse and productive native and desirable non-native plant communities in	Protect and retain sub-merchantable trees and shrubs within 50 feet of streams and wetlands (SMZ Rule #5). If required, an application for Alternative Practice (SMZ Rule #10) would be submitted for manual thinning within the SMZ to include areas that are proposed to benefit aspen and

OBJECTIVE	DESIGN FEATURE
riparian zones.	associated species.
	Slash piles will not be created within 50 feet of streams and wetlands.
	Non-commercial thinning is proposed within 100 feet of streams or wetlands in Units 70-75. The sites were reviewed by the fisheries biologist or hydrologist to ensure they met the riparian management objectives.
	Prescribed burning is proposed within 100 feet of streams. During development of the burn plan, the sites would be reviewed by the fisheries biologist or hydrologist to ensure they met the riparian management objectives.
	Hand ignition would be allowed within the RHCA, but not within 50 feet of streams or within wetlands (SMZ Rule #3). Fire may be allowed to back into wetlands. Helicopter ignition would not occur within RHCAs. The need for an SMZ Law Alternative Practice would also be assessed when unit-specific burn plans are developed.
	Generally, hand fireline will not be dug in the RHCAs. If needed, hand fireline can be dug in the RHCAs and must 1) avoid wetlands, 2) contain proper drainage structures, and 3) be recontoured and covered with slash upon completion of the burn. Machine fireline is prohibited in RHCAs. Allowing prescribed fire to back into RHCAs and wetlands negates the need for firelines near these areas.
Avoid direct effects to native fish and risks associated with aquatic invasive species.	If drafting from streams occurs, intake hoses will be fitted with a screen mesh equal to or smaller than 3/32 inch.
	Prior to entering the project area all equipment that has the potential to come into contact with water must be inspected, clean and dry. Do not transfer any water, sediment, or vegetation when moving between drafting sites
Ensure that water-related beneficial uses are protected and that State water quality standards are me	Protect the BRID irrigation ditches during harvest including: Lost Horse Feeder Canal and the main BRID Canal from Lake Como.
	Best Management Practices will be applied and monitored during the administration of the contract. Applicable BMPs are in the Project File and summarized in Appendix A.
	The design and replacement of the Lick Creek culvert in road 10051 would accommodate a 100 year flood, including associated bedload and debris, and provide passage for aquatic species (INFISH RF-4 & RF-5). This is a low priority crossing for aquatic species because non-native brook trout are very abundant above and below the culvert. The culvert should be replaced in context of the higher priority crossings on the Forest.
WILDLIFE	
Protect aspen clones during burning	After slashing conifers within the aspen clones, drag slash 50 feet away from the clones to prevent high fire severity within and on top of the clone. In Unit 73, whole tree yard conifers from the aspen clone. design
Provide snag habitat for wildlife	Stand level prescriptions by a certified silviculturist and wildlife biologist will provide unit-specific snag retention requirements including spatial distribution, species, and snag sizes.
	Prescriptions will meet the proposed snag standards including the following number of snags over 9" DBH retained by Fire Groups if they exist in the unit prior to treatment.

Fire Group	Snags (average number of trees per acre)
2,4	2-5
6	4-12
7, 8, 9	10-15

OBJECTIVE	DESIGN FEATURE
	Irregular distribution and small clumps are desirable. Snags retained will include some from the largest diameter size class available within that unit.
THREATENED, ENDANGERED, AND SENSITIVE PLANTS	
Promote revegetation with native plant species	Use local seeding guidelines for detailed procedures and appropriate mixes. Refer to the Forest Seed Mix to determine which species to use (FSM 2070.3)
Protect sensitive plant populations during harvest operations	Rare plant populations would be identified and buffered from project activities. Buffer widths are based on habitat requirements of the specific plant populations. Buffered rare plant populations will be mapped and identified in the field
	Machinery, fire ignition, tree felling, anchor trees, and slash piling would not occur within an identified rare plant buffer. Fire can creep into identified plant sites.
	Proposed alterations to locations of temp roads, TLM trails and landings will follow standard contact provisions for the protection of rare plants along with the timely involvement of the Forest Botanist or alternate specialist designated by the Forest Botanist. Rare plant populations would be protected by a minimum 100' buffer. Use of existing roads within 100' of population is allowed.
Promote revegetation with native plant species	Treat areas with high-risk invasive species infestations (as defined in Regional Risk Assessment Factors and Rating protocol) before burning. Monitor treatment success after burning and retreat if necessary.
	Treat invasive species before obliterating decommissioned roads; re-vegetate after obliteration.
INVASIVE PLANTS	
Reduce the risk of invasive plant spread	Integrate invasive plant prevention and management in all prescribed burning (FSM 2080).
	Remove all mud, dirt, and plant parts from all equipment before moving into the project area. Cleaning must occur off National Forest lands (this does not apply to service vehicles that will stay on the roadway, traveling frequently in and out of the project area).
	All gravel and borrow sources would be inspected and approved, by the Forest Noxious Weed Coordinator/Forest Botanist, before use and transport. The source will not be used if invasive plants present at the pit are not found at the site of intended use. If invasive plants are present, they must be treated before transport and use.
	Regularly inspect, remove, and properly dispose of invasive plant parts and seed found on clothing and equipment.
	Do not operate in areas with designated areas. These areas will be identified on a map and in the field. (Affects parts of units 1, 24, 37, and 50.)
HERBICIDE USE	
Protect water quality	Herbicides will not be used to control weeds within a 100-foot radius of any potable water spring development or diversion within the project area.
	Mixing and loading tanks will occur more than 300 feet from live water where possible. No mixing will occur within 100 feet of live water.(
	Use of herbicides and surfactants adhere to mitigation measures and design criteria in the Weed EIS (2003) O:\NFS\Bitterroot\Program\2900InvasiveSpecies\InvasivePlants\nepa\2003-FEIS, or updates to the document.
TIMBER MANAGEMENT	
Prevent the spread of annosus root disease	Apply borate to freshly cut ponderosa pine stumps greater than 12 inches in diameter (inside bark).

OBJECTIVE	DESIGN FEATURE
	Prevent damage to residual trees during harvest
Prevent pine engraver (Ips spp.) population increases	All non-commercial thinning in units with ponderosa pine and lodgepole pine must be performed between the months of July 1 thru December 31. Slash must be properly disposed of, i.e., piled and burned or lopped and scattered. Where limbs and tops exceed three inches in diameter, they need to be bucked in four-foot lengths and scattered to allow time for larger boles to dry out and not become Ips beetle host sites the following year.
SCENERY	
Subordinate management activities to the natural character of the landscape on NFSR 5621, 1111, and 429	Limit the number of log landings near sensitive viewsheds (along Lake Como and Lick Cr roads); Units 8, 14, 16, 38, 45, 46, and 59
	Cut stumps to 8 inches or less that are within 125 feet of NFSR 5621 in Units 8, 14, 16, 38, and 59
	Slash piles visible from NFSR 5621, Lake Como, or campground (in Units 8, 14, 16, 38, 45, 46, and 59, would be removed or burned within one year of unit completion. Landings adjacent to NFSR 5621 will be rehabilitated immediately after unit completion or slash removal. Landing piles should be burned so that most of the debris is consumed, re-piling and re-burning as needed.
	Within 50 feet of Trail 502 in Unit 8, remove slash, flush cut stumps to 8 inches or less, and burn slash within one year .
Reduce visual contrast	In aspen units, grade the density of ponderosa pine on the edges of the aspen units so as not to create a contrasting edge between the two stand types.
	Avoid straight lines and right angles in units adjacent to the forest boundary (Units 19, 26, 27, 28, 53)
	In Units 8, 14, 16, 38, 45, 46, 50, and 59 reduce the contrast between treated and untreated forest by softening the edges, retaining some understory trees, and retaining a higher density of trees on the unit borders.
	Reduce visual contrast of skyline corridors in Units 8, 15, 16, 46, and 47. Avoid aligning skyline corridors so they are perpendicular to sensitive views or use lateral yarding where feasible.
RECREATION MANAGEMENT	
Protect recreation facilities	Protect all signs along roads.
Protect public safety	Place area closure signs on roads and trails during harvest and rehabilitation operations. Use flaggers during operations of NFSR 5621
RANGE MANAGEMENT	
Protection of Trapper Peak grazing allotment improvements	Trapper Peak grazing allotment improvements will be mapped and protected from damage during logging operations.
HERITAGE RESOURCE MANAGEMENT	
Protect archaeological sites surrounding Lick Creek mineral lick	No ground disturbing activity in the meadow surrounding the lick or on the old logging railroad grade leading from Lick Creek to the lick.
Protect historic logging railroad grades currently in use as FS Roads.	Improvements and maintenance will be confined to existing road prism.
Protect cultural sites within the project area	No ground disturbance or pile burning to occur within 75 feet of known archaeological sites or historic structures. No excavation of historic railroad grades. Report new discoveries of cultural material to the Forest's Heritage

OBJECTIVE	DESIGN FEATURE
	specialists.
Protect cambium-peeled trees.	No removal of cambium-peeled ponderosa pine trees. No ground disturbance or herbicide use within the dripline of cambium-peeled trees. Employ directional falling of trees within one-and-a-half tree lengths of cambium-peeled trees. Employ hand removal of shrubs, ladder fuels and surface duff layers prior to use of underburning. Report new discoveries of cambium-peeled trees to the Forest's Heritage specialists.

The Forest Service also developed the following mitigation measures to be used in all of the action alternatives (Table 2.2-6).

Table 2.2-6: Mitigation Measures for the Como Forest Health Project

OBJECTIVE	MITIGATION MEASURE
WATERSHED AND FISHERIES	
Provide stable roads, conduct road maintenance and improve cross-drainage to minimize sediment and meet TMDL objectives for Lick Creek	Install new ditch drain pipe or rock-line ditch at (8) sites on NFSR 5621 and NFSR 5623. Shape road surface to facilitate drainage and apply aggregate surface to road through stream crossing and adjacent upgrade area. Clean existing ditches and pipes where needed.
RECREATION MANAGEMENT	
Reduce disruptions of public use in recreation sites	Log hauling may be restricted as agreed to by the District Ranger and Contracting Officer. Otherwise, log hauling will not occur on weekends or holidays
Prevent motorized access through freshly logged units	Use signage, slash, downed logs, earthen humps or berms, or boulders as well as increased agency presence in the area

2.3 Alternatives Considered but Eliminated from Detailed Study

NEPA requires Federal agencies to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Proposed Action provided suggestions for alternative methods to achieve the purpose and need. Some of these alternatives may have been outside the project scope of reducing potential mountain pine beetle-caused ponderosa pine mortality, reducing fuel loads, and maintaining the historic fire return intervals while maintaining the visual integrity of the larger Lake Como Recreation Area. They may also have been duplicative or determined to be components of alternatives considered in detail. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

The Forest Service received 25 comments suggesting alternatives to the proposed action ((PF-Scope-044). Three comments inspired the development of Alternative 3 and four comments inspired the development of Alternative 4. Eight comments made suggestions that would be components of the alternatives and did not require a specific alternative to address them. Five comments would be similar to the No Action alternative and would be analyzed under that alternative. Their effects on mountain pine beetle-caused mortality and reducing fuel loads would be the same as the No Action alternative.

- Erect signs explaining that mountain pine beetle is a natural disturbance mechanism in ponderosa pine stands.
- Withdraw the Como Forest Health project from analysis.
- Do not close any more roads on the Bitterroot National Forest.

- Leave all trees intact. Some trees will survive and fight off beetles.
- Eliminate units that have noxious weeds present on roads within units.

Five comments suggested alternatives that were not carried through analysis. Three of these comments requested the development of an alternative that would not require any forest plan amendments. A preliminary analysis of the project area showed that current levels of thermal cover, elk habitat effectiveness (EHE), and old growth do not exist. Though management options exist to improve some of these conditions, they would not meet standards even after project implementation. Forest plan standards for coarse woody debris for some habitat types are higher than recommended in current research. For these reasons, this alternative was not carried through analysis.

One comment suggested the project be designed within the framework of the Montana Forest Restoration Committee 13 Principles. No specific recommendations were provided on how the project could be designed to fit the 13 Principles. Interdisciplinary Team review of the 13 Principles found that all the alternatives, including the No Action alternative, fit within the 13 Principles so a new alternative was not developed.

Another comment suggested the Forest Service develop an alternative that would only thin the understory and remove the diseased trees. This alternative was not carried through the analysis because the large diameter trees (trees greater than 10 inches DBH that most likely to be infested by the mountain pine beetle and cause the greatest increase in the developing population) would not be harvested. This alternative would not meet the purpose and need for the Como FH project.

2.4 Comparison of Alternatives

This section provides a summary of the activities and effects of implementing each alternative. The estimates provided in the tables were derived using the same methods for each alternative and are appropriate for comparing alternatives. The numbers represent our best estimates for project implementation but actual implementation may introduce variables not anticipated that could change the final outcome. Table 2.4-1 shows the areas or characteristics of areas affected by proposed activities for comparison between the alternatives. Table 2.4-2 compares how well the alternatives meet the purpose and need, and Table 2.4-3 is a summary of effects where effects can be distinguished quantitatively or qualitatively between alternatives. A more thorough discussion of resource effects is provided in Chapter 3.

Table 2.4-1: Proposed Activities in the Alternatives (Alt.) for the Como Forest Health Project. Green hi-light=number checked against data in Master Table

ACTIVITY	ALT. 1	ALT. 2	ALT. 3	ALT. 4
Project Area Treated (acres)	No New Treatments	3,314	3,159	2,107
Area of prescribed fire only (acres)	NA	1319	943	202
Area of harvest only (acres)	NA	8	53	35
Area of prescribed fire and harvest (acres)	NA	2001	2171	1873
Total Commercial Harvest (acres)	NA	1,476	1,292	1,115
Treatment by Forest Type (acres)				
Ponderosa pine (greater than 40% stand comp)	3,346	1,680	1,764	1,587
Lodgepole pine	227	47	7	0
Douglas-fir	1,994	280	167	45
Type of Commercial Harvest (acres)				
Clearcut	NA	0	0	0
80 ft^2/ac BA	NA	21	21	21

ACTIVITY	ALT. 1	ALT. 2	ALT. 3	ALT. 4
40-60 ft^2/ac BA	NA	825	783	752
Group selection	NA	288	162	0
Uneven-aged (individual tree selection)	NA	342	326	342
Aspen Release	NA	0	0	39
Non-commercial Thinning	NA	531	924	769
Type of Yarding (acres)				
Tractor	NA	909	935	903
Cable	NA	179	75	46
Estimated Volume (MMBF)	0	5,713	5,182	4,745
(CCF)	0	11,845	10,745	9,838
Road Construction (mile)	NA	1.7	0	0.7
Temporary Roads (mile)	NA	2.0	0	1.1
Tracked Line-Machine Trail (mile)	NA	2.6	0	0.5
Undetermined Roads to Retain (mile)	7.17	3.35	3.35	3.35
Undetermined Roads to decommission (mile)	NA	3.82	3.82	3.82
Watershed Improvement (sites)	0	10	10	10
Roads stored (miles)	5.09	6.19	6.19	6.19
Landing piles (number)	0	193	104	93
Landing area (acres)	NA	27.4	19.3	17.4
Prescribe Fire (acres)	NA	3,320	3,105	2,075
Broadcast burn Low	NA	2,766	2,551	1,904
Broadcast burn Mod.	NA	554	554	171
Wildland Urban Interface treated (acres)	NA	2,236	1,992	1,452
% of treated area	NA	67	63	69

Table 2.4-2: Comparison of Alternatives at Meeting the Purpose and Need

MEASURE	ALT 1	ALT. 2	ALT.3	ALT.4
REDUCE POTENTIAL MOUNTAIN PINE BEETLE-CAUSE MORTALITY IN PONDEROSA PINE				
Ponderosa pine forest with basal area less than 60 ft^2/acre (area)		1,393	1,373	1,352
IMPROVE FOREST RESILIENCE TO INSECT AND DISEASE COMPLEXES, MOUNTAIN PINE BEETLE, DOUGLAS-FIR BEETLE, DWARF MISTLETOE, ROOT ROTS				
Cover Types s treated (% area)	existing	treated		
Ponderosa pine	3,346 (59)	1,962 (58)	1,987 (59)	1,570 (47)
Douglas-fir	1,994 (35)	1,125 (56)	957 (48)	546 (27)
Lodgepole pine	227 (4)	189 (83)	189 (83)	0
Sub-alpine fir	55 (1)	31 (56)	30 (54)	2 (4)
aspen	21 (0.4)	0	0	39
REDUCE FUEL LOADS TO RETURN OR MAINTAIN HISTORIC FIRE RETURN INTERVALS IN THE PROJECT AREA				
Area by Fire Type (acres)				
Surface fire	1,729	3,611	2,914	2,828
Torching fire	3,420	1,921	2,467	2,406
Crown Fire	497	165	315	462
MAINTAIN THE VISUAL INTEGRITY OF THE LARGER LAKE COMO RECREATION AREA				
Area that meets visual quality objectives	All viewpoints meet VQOs	Lake Como, Lake Como Recreation area, Lake Como Road do not meet VQOs	Lake Como, Lake Como Recreation area, Lake Como Road do not meet VQOs	All viewpoints meet VQOs

Table 2.4-3: Comparison of Environmental Effects for Alternatives in the Como Forest Health Project.

MEASURE	ALT. 1	ALT. 2	ALT.3	ALT.4
WILDLIFE				
ELK (BIG-GAME MANAGEMENT INDICATOR SPECIES)				
Area of Hiding cover (acres)	3,077	1,222	1,482	2,314
Area of Thermal cover (acres)	869	273	424	806
Percentage of thermal cover in winter range	15	4.7	7.4	14
Elk security (area > than ½ mi from road)	1,091	848	854	1,022
Elk Habitat Effectiveness by 3rd order watershed	FP standard not met in 2 3rd order drainages	No change from Alt. 1	No change from Alt. 1	No change from Alt. 1
Old Growth				
Area of old growth (acres)	345	187	143	7
% old growth by 3rd order drainage MA 1 MA 2 MA 3a MA 3c	Meets old growth standard in MA 2 in one 3rd order watershed	Does not meet old growth standards for any MA in any 3rd order watershed	Does not meet old growth standards for any MA in any 3rd order watershed	Meets old growth standard in MA 2 in one 3rd order watershed
Suitable pileated woodpecker habitat (acre) (old growth MIS)	3,200	1,438	1,403	1,972
Suitable American marten habitat (acre) (old growth MIS)	1,081	486	587	1,032
Female marten carrying capacity	6	2	2	6
Sensitive Species				
Suitable flammulated owl habitat (acre)	3,009	1,297	1,245	1,795
Black-backed woodpecker	No effect	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing
Fisher resting/denning/foraging treated (acre)	NA	1,386	1,218	831
Fisher total undisturbed habitat (acre)	2196	810	978	1,365
Long-eared myotis, long-legged myotis, western big-eared bat	No effect	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing
Gray wolf	No effect	No effect	No effect	No effect
Western toad	No effect	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing
Threatened and Endangered species				
Area of Canada lynx habitat (acre)	All lynx standards and guidelines met	Veg. S6 and G4 not met	Veg. S6 and G4 not met	All lynx standards and guidelines met
Effects on wolverine	No effect	May affect, not likely to adversely	May affect, not likely to adversely	May affect, not likely to adversely

MEASURE	ALT. 1	ALT. 2	ALT.3	ALT.4
		affect	affect	affect
VISUAL QUALITY				
Units visible from sensitive viewsheds (#)	none	8, 9, 15, 16, 45, 46, 47	47	none
Fire effects on viewsheds	none	Short-term, negative effects but appearing natural	Same effects as Alt 2 but less relative to less area burned at moderate/high intensity	Same effects as Alts 2 and 3 but less extensive relative to less area burned at moderate/high intensity
Forest Plan VQO standards	met	Not met	Not met	met
TRANSPORTATION				
miles of open roads	18.31	18.73	18.73	18.73
miles of closed roads	18.06	20.99	20.99	20.99
Total miles of road	42.9	39.08	39.08	39.08
Miles of roads decommissioned	0	3.82	3.82	3.82
RECREATION				
Displacement of dispersed campers	none	Temporary closures during operations adjacent to recreation sites	Temporary closures during operations adjacent to recreation sites	Temporary closures during operations adjacent to recreation sites
Temporary road closures of travel delays	none	Expected during timber sale operations	Expected during timber sale operations	Expected during timber sale operations
SOILS				
Units that exceed R1 SQS for detrimental disturbance	None	4, 5, 15, 16, 20, 34, 46, 58, 60	50	15, 16, 50, 62, 75
FUELS AND FIRE BEHAVIOR				
Fire Severity (acres)				
Surface	1,729	3,611	2,914	2,828
Torching	3,470	1,921	2,467	2,406
Crown Fire	497	165	315	462
WEEDS				
Potential for weed spread	Current trend continues	Potential weed spread minimized through design criteria	Same as Alt 2 but lower potential because roads and TLM trails not developed	Same as Alt 2 but lower potential because fewer roads and TLM trails developed
Area of soil displacement (acre)	NA	29.9	19.0	18.7
THREATENED, ENDANGERED, SENSITIVE PLANTS				
Effects on threatened, endangered, or sensitive plants	No effect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
HYDROLOGY				
Potential Sedimentation	Very low	Very low	Very low	Very low
Effects on wetlands	No effect	Low probability due to design features	Low probability due to design features	Low probability due to design features though may affect

MEASURE	ALT. 1	ALT. 2	ALT.3	ALT.4
				wetlands associated with aspen units
FISHERIES				
Bull trout	No effect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Bull trout critical habitat	No effect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Western cutthroat trout	No effect	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing	May affect not likely to trend to Federal listing
Western pearlshell mussel	No effect	No effect	No effect	No effect
SPECIAL AREAS				
Wild and Scenic River eligibility	No effect	No effect	No effect	No effect
Unroaded area				
Natural integrity	low	Lower during implementation and until roads are rehabilitated	No change	Lower during implementation and until roads are rehabilitated
Apparent naturalness	low	Lower during implementation and until roads are rehabilitated	Lower during implementation; no roads to rehabilitate	Lower during implementation and until roads are rehabilitated
Solitude and primitive recreation	low	Lower during implementation	Lower during implementation	Lower during implementation
Remoteness	low	Lower during implementation	Lower during implementation	Lower during implementation
Unique features	none	none	none	none
Manageability/boundaries	low	No effect	No effect	No effect
ROADLESS AREAS				
Natural integrity	No effect	No effect	No effect	No effect
Apparent naturalness	No effect	Lower during implementation	Lower during implementation	No effect
Solitude and primitive recreation	No effect	Lower during implementation	Lower during implementation	Lower during implementation
Remoteness	No effect	Lower during implementation	Lower during implementation	Lower during implementation
Unique features	none	none	none	none
Manageability/boundaries	No effect	No effect	No effect	No effect
PROJECT FEASIBILITY				
Volume Harvested (CCF)	NA	11,845	10,745	9,838
Stumpage ($/CCF)	NA	21.77	44.09	38.16
Is Alternative feasible	NA	yes	yes	yes
FINANCIAL EFFICIENCY				
Revenue	NA	485,408	680,158	564,406
Present Net Value (PNV), Mandatory expenditures only ($)	NA	47,000	255,000	181,000
PNV, all expenditures ($)	NA	-208,578	-258,692	-268,417
ECONOMIC IMPACT				

MEASURE	ALT. 1	ALT. 2	ALT.3	ALT.4
Total jobs contributed	NA	82	78	72
Total labor income ($)	NA	3,809,000	3,595,000	3,307,000